REMARKS

The claims in the case are amended claim 1, claim 2, amended claim 3, amended claims 4 and 5, claim 6 and 7, amended claim 8, claims 9 and 10, amended claim 11 and newly added claims 12, 13 and 14.

The claims (1, 3, 4, 5, 8 and 11) have all been amended to obviate the antecedent basis objections noted by the Examiner. Applicant's attorney appreciates the Examiner's thorough review and without referencing all of the changes to make the antecedent basis correctly, the Applicant's attorney calls the Examiner's attention to the attached page labeled Amendment - Version With Markings to Show Changes Made.

The Examiner has rejected both the method claim and the composite article of manufactured claim over the combination of two references Sump (U.S. 4,115,311) in view of the teaching of Leuchtag (U.S. 4,320,028). Given to us the simplest, the theory of the rejection is that Sump discloses a nuclear waste storage container and Leuchtag teaches that it is known to store nuclear waste 300 m deep so as to lie below the permafrost level. This obviousness rejection is traversed.

Applicant believes that the Examiner has failed to make a *prima facie* showing of obviousness of either the method claim or the constructional composite claim. The invention cannot be obvious if it is not suggested by the combination of references since there is no modification suggested in the references to make the combination, nor would the combination as suggested by the Examiner even arrive at all of the elements of either the

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method claim or the composite claim, see e.g. In re Dembiczak, 175 F.3d 994, 50 U.S.P.Q.2d 614 (Fed. Cir. 1999).

In determining obviousness of an invention whether a method invention is claim 1 or a composite invention as claims 8 and 12, the Examiner by statutory mandate of 35 U.S.C. § 103(a) must consider "the subject matter as a whole." The subject matter as a whole here includes storage in permanent glacial ice in a container dimensionally configured such that the temperature in the center is sufficiently hot but the outside of the capsule will be heated sufficiently to melt ice but not exceed safety limits and yet not sufficiently high to seriously enhance corrosion of the capsule. At the same time the capsule must provide adequate radiation shielding. The capsule when placed on the permanent ice simply melts its way down to the bottom with the ice refreezing on top. Storage there for 600-800 years makes it no more hazardous than the hazard associated with the uranium ore that it originated from (see Specification, p. 3, Summary of the Invention). The constructional details are emphasized on page 7 of the Specification and in both the method and the composite structure claims 1, 8 and 12.

Nothing in the teaching of the Sump reference which teaches a completely different kind of container links the importance of dimensional configuration with a device which allows melting of permanent glacial ice by the heat generated as the material decays. Moreover, nothing in the references teaches anything about storage in permanent ice, with Leuchtag simply teaching

storage below permafrost levels. In short, even combining Sump and Leuchtag does not provide or suggest Applicant's invention.

With regard to the Examiner's statement that "it would be obvious to one of ordinary skill in the art to heat the container of Sump so that it may melt its way down...". Applicant does not heat the container. The container is heated by the natural decay energy which keeps the container hot, and because of its correct dimensional configuration and composition, the calculations of which are detailed precisely in the application, it is cooled by the ice, melts its way down through the ice and subsequently is surrounded by the bottom as well as some melt water. The melt water further up on top refreezes. Eventually it decays to no more than background decay energy of natural ores.

Leuchtag's suggestion about below permafrost level in any future ice age, obviously does not suggest storage in glacial ice in places like Greenland or Antarctica for example. In contrast, he is talking about permafrost in the geologically accepted sense, and nothing else.

Finally, the Examiner's attention is redirected to the enclosed declaration of the inventor. The inventor's paper concerning this concept has been accepted by distinguished peer review group as a paper at the 17th Congress of the World Energy Council and subsequent publication in the proceedings thereof. This declaration is being submitted under *Graham v. John Deere Co.* as evidence of non-obviousness to indicate that the method and the design of the container here discussed is anything but obvious.

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Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Reconsideration and allowance is respectfully requested.

Respectfully submitted,

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Application No. Serial No. 09/338,827

AMENDMENT — VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

In the Claims

1. (Amended)

A method of fission product disposal in permanent icefields, comprising:

storing nuclear reactor waste for a period of time sufficient to let short life materials decay leaving other fission products and actinides;

separating the [balance of the] other fission products from the actinides;

embedding the separated other fission products in a metal matrix having a sufficient thermal conductivity and a sufficiently high melting point to successfully store the fission products, and thereafter

placing the other fission products [matrix] [as the core of] in a capsule container having a container core to hold the other fission products and an outer cover to encase the fission products,

said outer cover being a corrosion resistant material with sufficient strength, density, and thermal conductivity to avoid environmental corrosion over time, and being of a dimensional configuration such that [the] radiation outside the container does not exceed safety limits, and such that

the outside surface of the container is of a sufficiently high temperature to melt ice found in permanent icefields, yet is not sufficiently high to seriously enhance corrosion of the [sphere] container.

3. (Amended)

The method of claim 1 wherein the fission products [matrix] of the core are oxides in a lead matrix.

4. (Amended)

The method of claim 1 wherein the [storage] storing for a time sufficient to let short life materials decay is at least ten years.

5. (Amended)

The method of claim 1 wherein the [separated] actinides are recycled for fuel use.

8. (Amended)

A radiation waste container for use in storage of fission products separated from actinides in permanent ice, comprising:
a corrosion resistant container having a core filled with fission product separated from the actinides,
said fission product being in a metal matrix to successfully encapsulate and store said fission product,
said core and container being dimensionally configured such that radiation outside the container does not exceed safety limits and that the container surface reaches a temperature sufficiently high to melt ice, but not [corrode] cause corrosion of the container surface.

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11. (Amended)

The container of claim 8 wherein the [embedding] metal matrix is deposited by electrochemical deposition.

12. (New)

A spherical radiation waste container for use in storage of fission products, separated from actinides in permanent ice, comprising:

a spherical corrosion resistant container having a core filled with said fission products separated from actinides,

said fission products being in a metal matrix of spherical configuration to successfully encapsulate and store said fission products,

said core and said metal matrix being dimensionally configured to define a waste container such that the radiation outside the waste container does not exceed safety limits and that the container surface reaches a temperature sufficiently high to melt ice, but not cause corrosion of the container surface, nor render the temperature at the center too high.

13. (New)

The container of claim 12 wherein the metal matrix is a lead matrix.

14. (New)

The container of claim 12 wherein the corrosion resistant container is stanless steel.

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